

CLAIMS

1. An FCD system for collecting traveling locus data from a in-vehicle unit in a vehicle via beacons,

wherein a downstream-side beacon collects the traveling
5 locus data, a traveling distance of the vehicle from an upstream-side beacon to the downstream-side beacon is calculated based on the traveling locus data, and a determination is made whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the
10 objective road, by comparing the traveling distance with a distance on an objective road from the upstream-side beacon to the downstream-side beacon.

2. An FCD system comprising:

15 a plurality of beacons provided at an objective road section over which traveling locus data of a vehicle are collected from a in-vehicle unit in the vehicle;

traveling distance calculating means for calculating a traveling distance of the vehicle from an upstream-side beacon
20 to a next downstream-side beacon on the objective road based on the traveling locus data; and

deciding means for deciding whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the objective road section, in response to a
25 compared result between the traveling distance and a distance on the objective road from the upstream-side beacon to the downstream-side beacon.

3. An FCD system comprising:

a plurality of beacons provided at an objective road over which traveling locus data of a vehicle are collected from a
5 in-vehicle unit in the vehicle; and

deciding means for deciding whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the objective road section, in response to a compared result between the traveling distance of the vehicle
10 from an upstream-side beacon to a next downstream-side beacon on the objective road, which is indicated by the traveling distance data, and a distance on the objective road from the upstream-side beacon to the downstream-side beacon.

15 4. An FCD system according to claim 1, 2 or 3, wherein the in-vehicle unit contains data of a transit time in each unit interval, which is measured in unit of a predetermined distance, in the traveling locus data.

20 5. An FCD system according to claim 1, 2 or 3, wherein the in-vehicle unit contains data of an average speed in each unit interval, which is measured in unit of a predetermined distance, in the traveling locus data.

25 6. An FCD system according to claim 1, 2 or 3, wherein the in-vehicle unit contains data of a speed, which is measured every time when the vehicle travels each unit interval in unit

of a predetermined distance, in the traveling locus data.

7. An FCD system according to claim 1, 2 or 3, wherein the in-vehicle unit contains data of a traveling distance in each unit time, which is measured in unit of a predetermined time, in the traveling locus data.

8. An FCD system according to claim 1, 2 or 3, wherein the in-vehicle unit contains data of an average speed in each unit time, which is measured in unit of a predetermined time, in the traveling locus data.

9. An FCD system according to claim 4, wherein the deciding means decides whether or not the traveling locus data in the unit interval are used in analyzing the traffic conditions of the objective road, based on the transit time in the unit interval.

10. An FCD system according to claim 5, wherein the deciding means decides whether or not the traveling locus data in the unit interval are used in analyzing the traffic conditions of the objective road, based on the average speed in the unit interval.

11. An FCD system according to claim 6, wherein the deciding means decides whether or not the traveling locus data in the unit interval are used in analyzing the traffic

conditions of the objective road, based on the speed in the unit interval.

12. An FCD system according to claim 7, wherein the
5 deciding means decides whether or not the traveling locus data in the unit time are used in analyzing the traffic conditions of the objective road, based on the traveling distance in the unit time.

10 13. An FCD system according to claim 8, wherein the deciding means decides whether or not the traveling locus data in the unit time are used in analyzing the traffic conditions of the objective road, based on the average speed in the unit time.

15 14. An FCD system for collecting traveling locus data from a in-vehicle unit in a vehicle via a beacon,

wherein the beacon collects the traveling locus data, transit road intervals of the vehicle, which come up to the
20 beacon, is specified by using position data contained in the traveling locus data, and a speed is specified by interpolating points between speed data measuring points in the transit road intervals by using speed data contained in the traveling locus data.

25 15. An FCD system comprising:
a beacon provided at an objective road section, for

collecting traveling locus data including position data and speed data of the vehicle;

road interval specifying means for specifying transit road intervals of the vehicle reaching the beacon, by using the
5 position data in the traveling locus data that are collected by the beacon; and

speed specifying means for interpolating points in the specified transit road intervals by using the speed data contained in the traveling locus data that are collected by the
10 beacon and specifying a measuring point of the speed data and a speed at the measuring point.

16. An FCD system according to claim 14 or 15, wherein the in-vehicle unit measures intermittently the position data
15 and measures the speed data at a frequency that is higher than a frequency measuring the position data.

17. An FCD system according to claim 16, wherein the in-vehicle unit measures the position data at a predetermined
20 distance interval and also measures the speed data at another predetermined distance interval that is shorter than the predetermined distance interval.

18. An FCD system according to claim 17, wherein the
25 position data are represented by an argument.

19. An FCD system according to claim 16, wherein the

in-vehicle unit measures the position data at a predetermined time interval and measures the speed data at another predetermined time interval shorter than the predetermined time interval.

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20. An FCD system according to any one of claim 4 to claim 19, wherein the in-vehicle unit represents the measured data by a difference component from data measured at a preceding measuring point.

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21. An FCD system according to claim 20, wherein the in-vehicle unit converts the data represented by the difference component into variable-length codes.

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22. An FCD system according to claim 21, wherein the upstream-side beacon instructs the coding system of the data to the in-vehicle unit.

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23. An FCD system according to claim 22, wherein the upstream-side beacon instructs a measured value sampling interval, a quantization unit, and a code table in the coding system.

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24. An FCD collecting facility for collecting traveling locus data from a in-vehicle unit in a vehicle via beacons, wherein the traveling locus data are collected by a downstream-side beacon, a traveling distance of the vehicle

from an upstream-side beacon to the downstream-side beacon is calculated based on the traveling locus data, and a determination is made whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the objective road, by comparing the traveling distance with a distance on an objective road from the upstream-side beacon to the downstream-side beacon.

25. An FCD collecting facility provided in plural to an objective road section, comprising:

data collecting means for collecting traveling locus data provided from a in-vehicle unit in a vehicle;

traveling distance calculating means for calculating a traveling distance of the vehicle from an upstream-side FCD collecting facility to a next downstream-side FCD collecting facility on the objective road based on the traveling locus data; and

deciding means for deciding whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the objective road section, in response to a compared result between the traveling distance and a distance on the objective road from the upstream-side FCD collecting facility to the downstream-side FCD collecting facility.

26. An FCD collecting facility provided in plural to an objective road section, comprising:

data collecting means for collecting traveling locus data

provided from a in-vehicle unit in a vehicle; and

deciding means for deciding whether or not the traveling locus data of the vehicle are used in analyzing traffic conditions of the objective road section, in response to a compared result between the traveling distance of the vehicle from an upstream-side FCD collecting facility to a next downstream-side FCD collecting facility on the objective road, which is indicated by the traveling locus data, and a distance on the objective road from the upstream-side FCD collecting facility to the downstream-side FCD collecting facility.

27. An FCD collecting facility according to claim 24, 25 or 26, wherein deciding means decides whether or not the traveling locus data in the unit interval or the unit time are used in analyzing traffic conditions of the objective road, based on a magnitude of the traveling locus data in the unit interval or the unit time.

28. An FCD collecting facility for collecting traveling locus data from a in-vehicle unit in a vehicle via beacons, comprising:

wherein the traveling locus data are collected by a downstream-side beacon, then transit road intervals of the vehicle, which come up to the downstream-side beacon from an upstream-side beacon, are specified by using position data contained in the traveling locus data, and then speed data are specified by interpolating points between speed data measuring

points in the transit road intervals by using speed data contained in the traveling locus data.

29. An FCD collecting facility provided in plural to an
5 objective road section, comprising:

a data collecting means for collecting traveling locus data containing position data and speed data of the vehicle provided from a in-vehicle unit in the vehicle;

a road interval specifying means for specifying transit
10 road intervals of the vehicle reaching the FCD collecting facility, by using the position data contained in the collected traveling locus data; and

a speed specifying means for interpolating points in the specified transit road intervals by using the speed data
15 contained in the collected traveling locus data and then specifying a measuring point of the speed data and a speed at the measuring point.

30. An FCD collecting facility according to any one of
20 claim 24 to claim 29, further comprising:

a coding instructing means for instructing a coding system of the traveling locus data to the in-vehicle unit from the upstream-side beacon; and

a decoding means for decoding the traveling locus data
25 collected by the downstream-side beacon by a decoding system that corresponds to the coding system.

31. A in-vehicle unit for transmitting traveling locus data of a vehicle equipped with the unit to beacons, comprising:

a coding means for coding the traveling locus data measured after the vehicle passed under an upstream-side beacon; and

a transmitting means for transmitting the coded traveling locus data to a downstream-side beacon.

32. A in-vehicle unit according to claim 31, wherein the coding means encodes the traveling locus data by a coding system instructed by the upstream-side beacon.

33. A in-vehicle unit according to claim 31, wherein the coding means encodes the traveling locus data by using a code table that is selected from a plurality of held code tables.

34. A in-vehicle unit according to claim 31, wherein the coding means encodes the traveling locus data by using a plurality of held code tables and then selects data transmitted to the downstream-side beacon from the coded data.